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PROVISIONAL SPECIFICATION

Apparatus for Treating with Liquids Samples of Textile Materials

We, EDWARD MARNEY, of Hexagon House, Blackley, Manchester, a British Subject, and IMPERIAL CHEMICAL INDUSTRIES LIMITED, Imperial Chemical House, Millbank, London, S.W.1, a Company incorporated under the laws of Great Britain, do hereby declare the nature of this invention to be as follows:—

The present invention relates to apparatus for treating with liquids samples of textile materials.

In particular it relates to apparatus whereby samples of textile materials are agitated in contact with liquids in the course of testing operations, as in the testing of dyestuffs, detergents, and such other chemical substances as, being described collectively as textile treating agents, are used for the indicated purposes in aqueous or other medium.

The invention is primarily directed to obviating the necessity of stirring or agitating by hand, sometimes for long periods of time.

It has been proposed to carry out, in a uniform way, dyeings of a plurality of textile samples by use of a corresponding number of heatable transparent vessels, e.g. dye-pots, each provided with a colander-like sample container, the containers being suspended from a carrier which itself is so provided with guides and a cam or crank mechanism that the carrier and the attached containers are given an up and down motion, whereby the textile samples are worked up and down within, or in and out of the liquor in the vessels.

In testing dyestuffs, detergents or the like in respect of their behaviour on textiles, the testing is usually comparative, and the comparisons, or some at least of the comparisons, are made by direct naked-eye observation. The procedure is well known, being described in, for instance, Knecht, Rawson and Loewenthal's Manual of Dyeing, 9th edition, 1941, Vol. II at page 810. It has become standard practice to use what from experience has been found to be a minimum size of hank or woven fabric for naked-eye observation, and consequently there is a corresponding minimum of volume of liquor — the correspondence being governed by the necessity of using, on the comparative tests, about the same proportions of materials as are used, or to be used, in operations in the works itself. Knecht et al (op. cit., p. 812) speak of using 10 grams of worsted yarn or cloth, and 10 grams or 20 grams of cotton yarn. However, a hank of cotton yarn of 5 grams in weight is in fact quite convenient for naked-eye observation and for any subsequent testing, and the appropriate amount of treating liquor can then be accommodated in a vessel of 200 c.c. capacity.

In our invention such relationships between observer's needs and quantities of materials to be handled are allowed for.

According to the invention an apparatus for treating with liquids samples of textile materials comprises a vessel for holding liquid of a particular shape and proportions described below, a carrier for the sample of textile material, and a mechanism for moving said carrier up and down when it is within the said vessel.

The vessel consists of a cylinder of suitable material, for instance resistance glass or stainless steel closed at one end and with a bell-shaped or funnel-shaped mouth at the other end. This bell- or funnel-shaped mouth is conveniently, but not necessarily a frustrum of a cone, and the volumes of the spaces within the cylindrical part of the vessel and the bell- or funnel-shaped mouth part are so proportioned as to allow reciprocating working of the carrier to take place within a volume of treating liquid which occupies not only the cylindrical part of the vessel but also some of the bell- or funnel-shaped mouth part.

The carrier may be a simple wire frame or may comprise a wire gauze cage, the wire, or other material being suitably resistant to any liquor to be used. For instance, the so-called stainless steel is a suitable material for most such purposes.

The dye-vessels should have a length of cylindrical portions of approximately five times the diameter of the cylinder. In the case of a five gram hank or piece of cloth this 5:1 relationship between length and diameter is also the optimum for convenience.

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The machine may be a multiple unit preferably with a minimum of three units but with no limit set to the maximum number of units. A 12 or 24 unit machine is found to be suitable for most work. The apparatus may be so designed that one or more units can be immobilised as required.

The invention is illustrated by the particular embodiment shown in the attached drawing of one unit of a multi-unit machine.

In this embodiment of the invention an up and down motion is imparted to the arm (A) by a thrust rod working from a cam shaft (E). The material holder (B) carries a vertical rod and hook which hangs onto a slightly recessed portion of the arm (A). The material holder is thus caused to move up and down in the dye vessel (C) which is immersed in the heating bath (D).

Dated the 27th day of May, 1947.

J. W. RIDSDALE,
Solicitor for the Applicants.

COMPLETE SPECIFICATION

Apparatus for Treating with Liquids Samples of Textile Materials

We, EDWARD MARNEY, of Hexagon House, Blackley, Manchester, a British subject, and IMPERIAL CHEMICAL INDUSTRIES LIMITED of Imperial Chemical House, Millbank, London, S.W.1, a Company incorporated under the laws of Great Britain, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

The present invention relates to apparatus for treating with liquids samples of textile materials.

In particular it relates to apparatus whereby samples of textile materials are agitated in contact with liquids in the course of testing operations, as in the testing of dyestuffs, detergents, and such other chemical substances as, being described collectively as textile treating agents, are used for the indicated purposes in aqueous or other medium.

The invention is primarily directed to obviating the necessity of stirring or agitating by hand, sometimes for long periods of time.

It has been proposed to carry out, in a uniform way, dyeings of a plurality of textile samples by use of a corresponding number of heatable transparent vessels, e.g. dye-pots, each provided with a colander-like sample container, the containers being suspended from a carrier which itself is so provided with guides and a cam or crank mechanism that the carrier and the attached containers are given an up and down motion, whereby the textile samples are worked up and down within, or in and out of the liquor in the vessels.

In testing dyestuffs, detergents or the like in respect of their behaviour on textiles, the testing is usually comparative, and the comparisons, or some at least of the comparisons, are made by direct naked-eye observation. The procedure is well known, being described in, for instance, Knecht, Rawson and Loewenthal's Manual of Dyeing, 9th edition, 1941, Vol. II at page 810. It has become standard practice to use what from experience has been found to be a minimum size of hank or woven fabric for naked-eye observation, and consequently there is a corresponding minimum of volume of liquor — the correspondence being governed by the necessity of using, on the comparative tests, about the same proportions of materials as are used, or to be used, in operations in the works itself. Knecht et al (op. cit., p. 812) speak of using 10 grams of worsted yarn or cloth, and 10 grams or 20 grams of cotton yarn. However, a hank of cotton yarn of 5 grams in weight is in fact quite convenient for naked-eye observation and for any subsequent testing, and the appropriate amount of treating liquor can then be accommodated in a vessel of 250 c.c. capacity.

In our invention such relationships between observer's needs and quantities of materials to be handled are allowed for.

According to the invention an apparatus for treating with liquids samples of textile materials comprises a vessel for holding liquid of a particular shape and proportions described below, a carrier for the sample of textile material, and a mechanism for moving said carrier up and down when it is within the said vessel.

The vessel consists of a cylinder of suitable material, for instance, resistance glass, nickel alloy, or stainless steel closed at one end and with a bell-shaped or funnel-shaped mouth at the other end. This bell- or funnel-shaped mouth is conveniently, but not necessarily a frustrum of a cone, and the volumes of the spaces within the cylindrical part of the vessel and the bell- or funnel-shaped mouth part are so proportioned as to allow reciprocating working of the carrier to take place within a volume of treating liquid which occupies not only the cylindrical part of the vessel but also some of the bell- or funnel-shaped mouth part.

The carrier may be a simple wire frame or may comprise a wire gauze cage, the wire, or other material being suitably resistant to any liquor to be used. For instance, the so-

called stainless steel is a suitable material for most such purposes.

The dye-vessels should have a length of cylindrical portion of approximately five times the diameter of the cylinder. In the case of a five gram hank or piece of cloth this 5:1 relationship between length and diameter is also the optimum for convenience.

The machine may be a multiple unit preferably with a minimum of three units but with no limit set to the maximum number of units. A 12 or 24 unit machine is found to be suitable for most work. The apparatus may be so designed that one or more units can be immobilised as required.

The invention is illustrated by the particular embodiment shown in the drawing, attached to the Provisional Specification of one unit of a multi-unit machine.

In this embodiment of the invention an up and down motion is imparted to the arm (A) by a thrust rod working from a cam shaft (E). The material holder (B) carries a vertical rod and hook which hangs onto a slightly recessed portion of the arm (A). The material holder is thus caused to move up and down in the dye vessel (C) which is immersed in the heating bath (D).

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An apparatus for treating with liquids, samples of textile materials which comprises a vessel for holding liquid of a particular shape and proportions as hereinbefore described, a carrier for the sample of textile material, and a mechanism for moving said carrier up and down when it is within the said vessel.

2. An apparatus for treating with liquids samples of textile materials which comprises a vessel for holding liquid, a carrier for the sample of textile material and a mechanism for moving said carrier up and down when it is within the said vessel, said vessel consisting of a cylinder of length approximately five times the diameter, closed at one end and with a bell-shaped or funnel-shaped mouth at the other end.

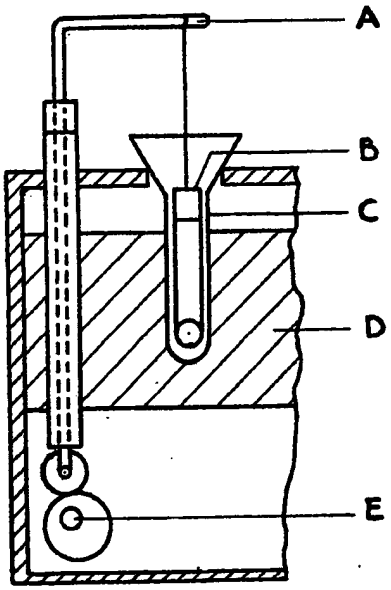
3. An apparatus for treating with liquids, samples of textile materials as hereinbefore particularly described and ascertained.

4. A machine for treating with liquids, samples of textile materials which comprises a plurality of units, each unit comprising an apparatus as claimed in any of the preceding claims.

Dated the 24th day of May, 1948.

J. W. RIDSDALE,
Solicitor for the Applicants.

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[This Drawing is a reproduction of the Original on a reduced scale.]

H.M.S.O. (Ty.P.)